The 2005 International Conference on Preconditioning Techniques For Large Sparse Matrix Problems in Scientific and Industrial Applications

May 19 - 21, 2005
Atlanta, Georgia

The 2005 International Conference on Preconditioning Techniques For Large Sparse Matrix Problems in Scientific and Industrial Applications was held in the Mathematics and Science Center on the campus of Emory University. The meeting was co-chaired by Michele Benzi (Emory University), Esmond Ng (Lawrence Berkeley Lab), Yousef Saad (University of Minnesota), and Wei-Pai Tang (The Boeing Co.). This was the fourth edition of the meeting, following the ones in Minneapolis (1999), Tahoe City (2001), and Napa (2003). The four preconditioning meetings held to date have been quite successful, and are widely regarded by the community as the premier venue for preconditioning research and applications.

The 2005 conference attracted approximately 90 participants, more than 30 of which from outside the US (mostly form Europe, but also Brazil, Canada, China, and Japan). The meeting was endorsed by SIAM and sponsored by DOE, NSF, ISCR, and several Emory University units. The DOE was well represented by several participants from Sandia, Livermore, Los Alamos, and Oak Ridge.

The conference featured 7 invited speakers and 45 contributed talks. The number of parallel contributed sessions was limited to two. The topics of the conference included an impressive range of techniques and applications. Recent developments on multilevel methods and hierarchical matrix techniques were presented, as well as the latest progress in general-purpose software based on incomplete factorization and sparse approximate inverse methods. Several speakers discussed implementation aspects for a variety of parallel architectures. Applications included traditional topics such as structural and fluid mechanics, electromagnetism, acoustics, transport, and image restoration, as well as emerging fields like quantum Montecarlo methods, quantum computing, and image registration for biomedical applications.

As its predecessors, the meeting was successful in bringing together computational science researchers and practitioners from academia, governments labs, and industry. As a result, the conference enjoyed a healthy balance of research on new methods, software aspects, and applications to a wide range of problems of urgent interest in industry and government.